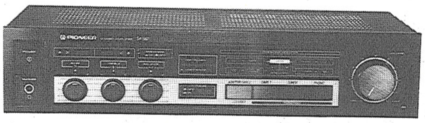
PIONEER®

Service Manual

CIRCUIT DESCRIPTIONS REPAIR & ADJUSTMENTS



ORDER NO.
ARP-832-0

STEREO AMPLIFIER

SA-560(BK)
SA-560

MODEL SA-560 [BK] COMES IN SIX VERSIONS DISTINGUISHED AS FOLLOWS;

Type	Applicable model		Power requirement	Destination
	SA-560 [BK]	SA-560		
HE	○	○	AC220V, 240V (switchable)	European continent
HB	○	○	AC240V, 220V (switchable)	United Kingdom
S	○	○	AC110V, 120V, 220V, 240V (Switchable)	General export
KC	○	–	AC120V only	Canada
HEZ	○	○	AC220V 240V (switchable)	West Germany
YP	○	–	AC240V only	Australia

- This service manual is applicable to the HE, HB and S types.
  As to the KC, HEZ, YP types, please refer to the additional service manual (ARP-833).
- As to the HB, S types, please see page 22.
- SA-560 [BK] is the same as the SA-560 except for the exterior design (color).

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PIONEER ELECTRONIC CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan
PIONEER ELECTRONICS [USA] INC. P.O. Box 1760, Long Beach, California 90801 U.S.A.
TEL: [800] 421-1404, [800] 237-0424
PIONEER ELECTRONIC [EUROPE] N.V. Keetberglaan 1, 2740 Beveren, Belgium TEL: 03/775·28·08
PIONEER ELECTRONICS AUSTRALIA PTY. LTD. 178-184 Boundary Road, Braeside, Victoria 3195, Australia
TEL: [03] 580-9911

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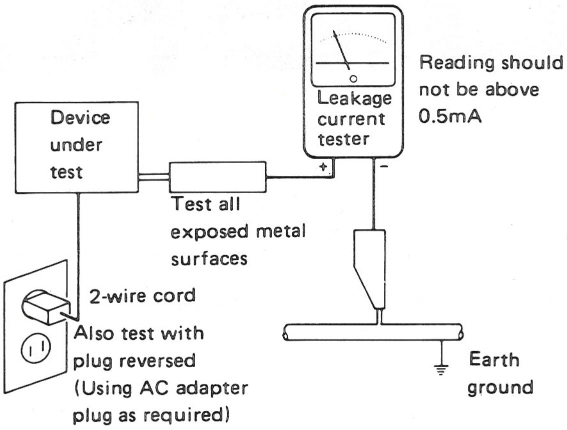
1. SAFETY INFORMATION

1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, ètc.). Plug the AC line cord of the appliance directly into a 120V AC 60Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5mA.


Reading should not be above 0.5mA
Leakage current tester
Device under test
+
-
Test all exposed metal surfaces
2-wire cord
Also test with plug reversed (Using AC adapter plug as required)
Earth ground

AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a ⚠ on the schematics and on the parts list in this Service Manual.

The use of a substitute replacement component which dose not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

QUESTIONNAIRE

MODEL ____________________
One Model per questionnaire

Dear Servicer,

Thank you for your cooperation in the post-sale service of Pioneer products.

This questionnaire is used as a tool to improve the serviceability of our products and service manuals. Please evaluate this model and service manual by answering the following questions. Your ideas may be realized in our future products. Your answers will be appreciated. Thank you.

PIONEER ELECTRONIC CORP.

T. Nakagawa, Manager, Service Section, International Division

1. SERVICING EVALUATION

	Circle applicable number:				
	Good		Fair		Poor
a. Disassembly/Re-assembly:	1	2	3	*4	*5
b. Circuit Checks:	1	2	3	*4	*5
c. Replacement of Parts:	1	2	3	*4	*5
d. Adjustment (s):	1	2	3	*4	*5

* If (4) or (5) was circled, please be specific.

e. Your advice, opinion or ideas related to servicing this product.

2. SERVICE MANUAL EVALUATION

a. Circuit & Mechanism Description

b. Circuit Diagram

3. OTHER

Please describe other areas of servicing which you may find difficult.

Completed by :

Date :

Company Name :

Address :

City/State/Zip :

Please send this form filled to the distributor in your country.

2. SPECIFICATIONS

Amplifier Section

Continuous average power output is 30 watts* per channel, min., at 8 ohms from 40 Hertz to 20,000 Hertz with no more than 0.5% total harmonic distortion.

Continuous Power Output (both channels driven)	
T.H.D. 0.5%, 1 kHz, 8 Ω	40 W per channel
T.H.D. 0.5%, 20 Hz to 20 kHz, 8 Ω	30 W per channel
DIN, Continuous Power Output at 1 kHz (both channels driven)	
T.H.D. 1%, 1 kHz, 8 Ω	40 W per channel
Input (Sensitivity/Impedance)	
PHONO	2.5 mV/50 kΩ
TUNER, TAPE PLAY ADAPTOR IN	150 mV/50 kΩ
Phono Overload Level (T.H.D. 0.1%, 1 kHz)	150 mV
Output (Level/Impedance)	
Headphone	67 mV/8 Ω
Frequency Response	
PHONO (RIAA Equalization)	20 Hz to 20 kHz ±0.5 dB
TUNER, ADAPTOR IN, TAPE PLAY	20 Hz to 70 kHz $^{+2}_{-3}$ dB
Tone Control	
BASS	±10 dB (100 Hz)
TREBLE	±10 dB (10 kHz)
Loudness Contour(Volume control set at −40 dB position)	
100 Hz	+6 dB
10 kHz	+3 dB
Hum and Noise (IHF, short circuited, A network)	
PHONO	72 dB
ADAPTOR IN, TUNER, TAPE PLAY	98 dB
Hum and Noise (DIN, continuous power / 50 mW)	
PHONO	68 dB/60 dB
ADAPTOR IN, TUNER, TAPE PLAY	82 dB/62 dB
Speaker Load Impedance	
A or B	6 — 16 Ω
A + B	6 — 16 Ω

Miscellaneous

Power Requirements	
HE model	a.c. 220 V ~, 50/60 Hz
HB, YP models	a.c. 240 V ~, 50/60 Hz
S, S/G models	~AC 110 V/120 V/220 V/240 V (switchable), 50/60 Hz
KU, KC models	AC 120 V, 60 Hz
Power Consumption	
HE model	240 W
HB, YP models	240 W
S, S/G models	100 W
KC model	150 W (CSA)
Dimensions	420 (W) x 98 (H) x 230 (D) mm 16-1/2 (W) x 3-7/8 (H) x 9-1/8 (D) in
Weight (without package)	4 kg (8 lb 13 oz)

Furnished Parts

Operating Instructions	1

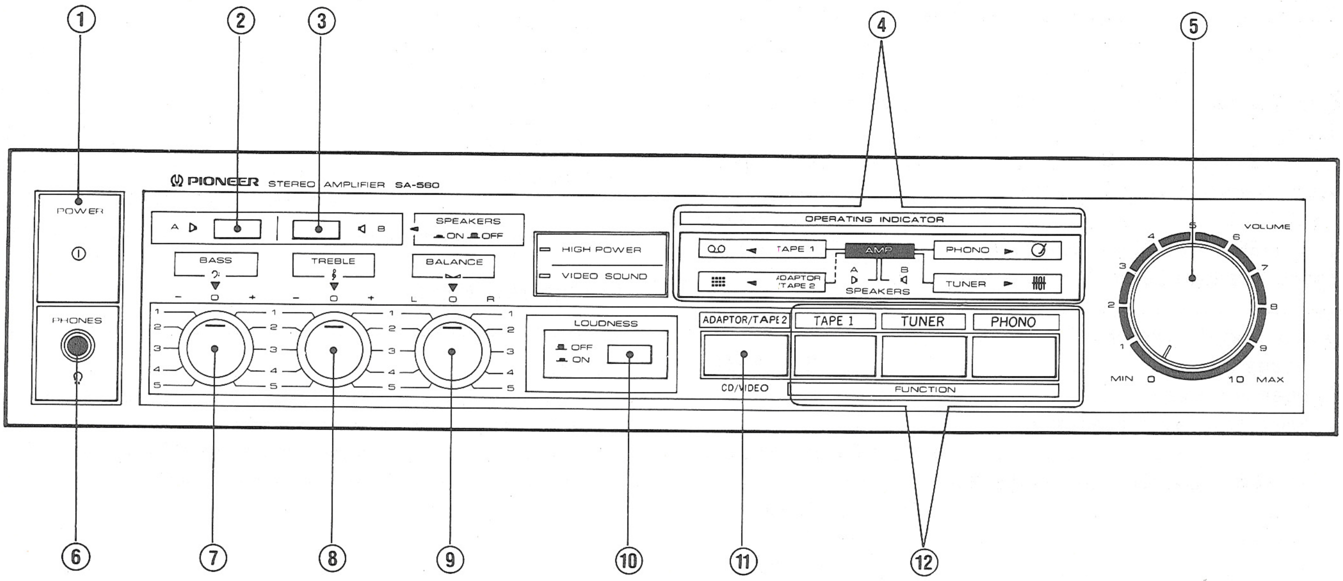
NOTE:

- *Specifications and design subject to possible modification without notice due to improvements.*
- **Measured pursuant to the Federal Trade Commission's Trade Regulation rule on Power Claims for Amplifier.*

3. FRONT PANEL FACILITIES

FRONT PANEL

Indications on the actual unit may differ from those in the illustration. However, operating procedures are the same.


①
②
③
④
⑤
PIONEER STEREO AMPLIFIER SA-560
POWER
PHONES
A
B
SPEAKERS
ON OFF
BASS
TREBLE
BALANCE
- 0 +
L 0 R
HIGH POWER
VIDEO SOUND
OPERATING INDICATOR
TAPE 1
AMP
PHONO
ADAPTOR /TAPE 2
SPEAKERS
TUNER
LOUDNESS
OFF
ON
ADAPTOR/TAPE 2
TAPE 1
TUNER
PHONO
CD/VIDEO
FUNCTION
VOLUME
MIN 0
10 MAX
⑥
⑦
⑧
⑨
⑩
⑪
⑫

① POWER switch

Press to turn power to the unit ON and OFF.
Depressed position (ON):
Power is supplied to the unit.
Released position (OFF):
Power to the unit is disconnected.

② SPEAKERS A selector switch

Use this switch to listen to the speaker systems connected to the SPEAKERS A terminals.
[ON] — Depressd position: Sound is heard from speaker systems.
[OFF] — Released position: No sound is heard from speaker systems. Set to this position when listening with headphones.

③ SPEAKERS B selector switch

Use this switch to listen to the speaker systems connected to the SPEAKERS B terminals.
[ON] — Depressed position: Sound is heard from the speaker systems.
[OFF] — Released position: No sound is heard from the speaker systems. Set to this position when listening with headphones.

④ Indicators

The indicators light to show the positions of the FUNCTION switches and ADAPTOR/TAPE2 switch.

⑤ VOLUME control

Use to adjust volume level.

⑥ PHONES jack

When using headphones, insert their plug into this jack.

⑦ BASS tone control

Use to adjust the low-frequency tone. The central "0" position is the flat (normal) position. When turned to the right, low-frequency tones are emphasized; when turned to the left, low-frequency tones are de-emphasized.

⑧ TREBLE tone control

Use to adjust the high-frequency tone.
The central "0" position is the flat (normal) position. When turned to the right, high-frequency tones are emphasized; when turned to the left, high-frequency tones are deemphasized.

⑨ BALANCE control

Should normally be left in the center position. Adjust balance if the sound is louder from one of the speakers. If the right side is louder, turn toward the left position and if the left side is louder, turn toward the right position.

⑩ LOUDNESS switch

Use when listening at low volume levels.
[OFF] — Released position: Should normally be left in this position.
[ON] — Depressed position: Boosts low and high frequencies to give added punch to playback even at low volume.

⑪ ADAPTOR/TAPE2(/CD/VIDEO) switch

Use when there is an adaptor component (graphic equalizer, etc.), compact disc player, video cassette recorder or tape deck connected to the ADAPTOR/TAPE 2 terminals.
[OFF] — ADAPTOR/TAPE2 indicator goes out: When not in use.
[ON] — ADAPTOR/TAPE2 indicator lights: When using the adaptor component or listening to the component connected to the ADAPTOR/TAPE2 terminals.

NOTE:
When no connections are made to the ADAPTOR/TAPE 2 terminals, or when they are not in use, be sure to set this switch to the OFF position. (No sound will be heard if it is set to the ON position.)

⑫ FUNCTION switches

Use to select playback source.
[PHONO] — Press when listening to record playback on a turntable.
[TUNER] — Press when listening to AM or FM broadcasts with a tuner.
[TAPE 1] — Press when listening to tape playback with a tape deck.

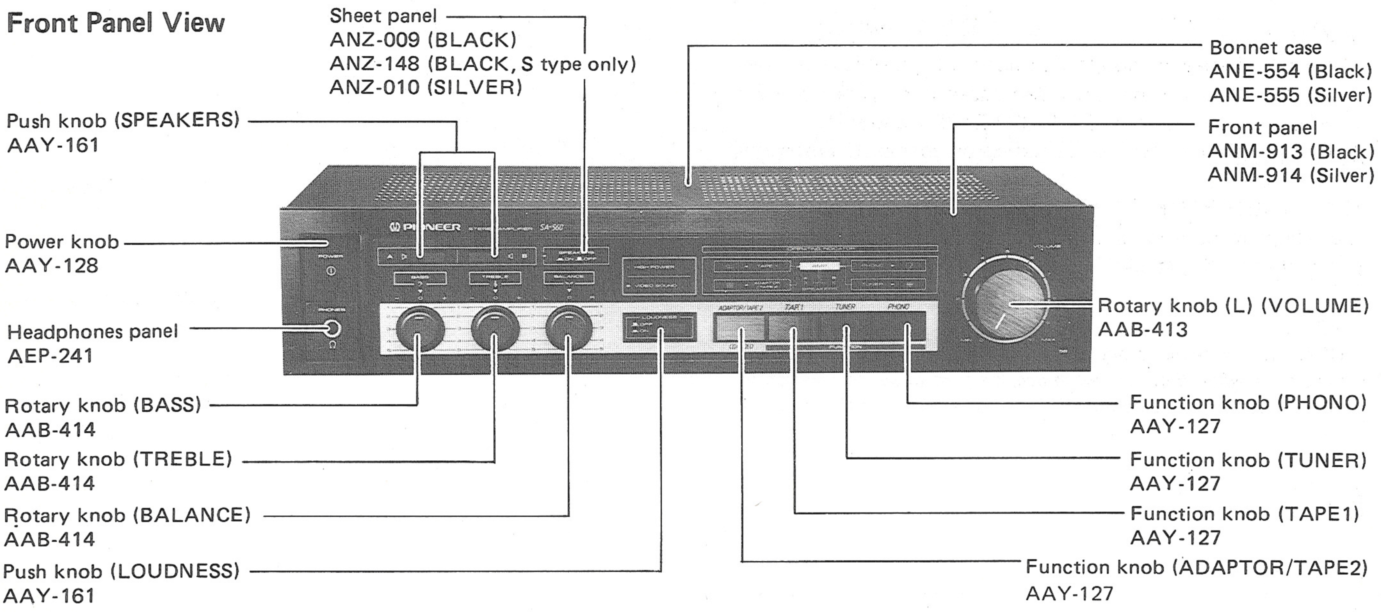
NOTE:
Function switches should be pressed firmly; otherwise, all the function indicators will light, and no output will be produced. If this occurs, press the desired function switch again.

4. PARTS LOCATION

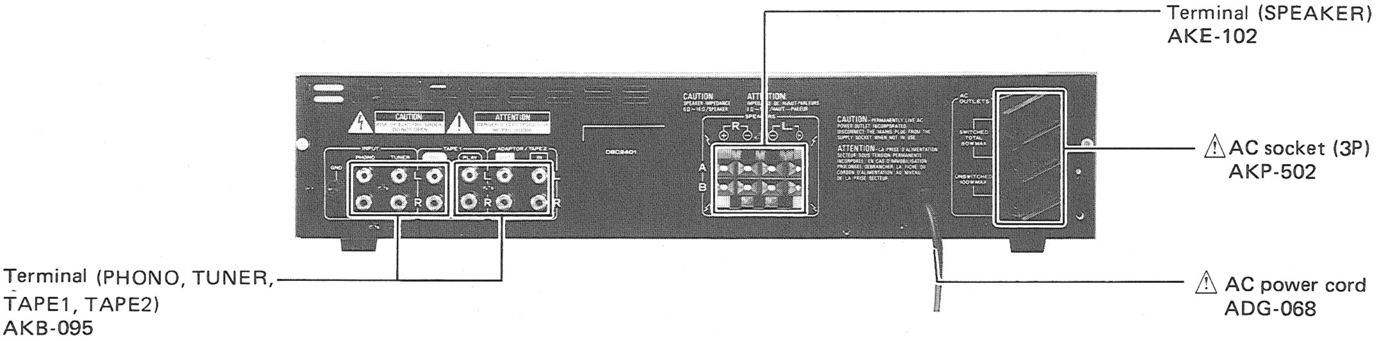
NOTES:

- *Parts without part number cannot be supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*
  ★★ GENERALLY MOVES FASTER THAN ★.
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.

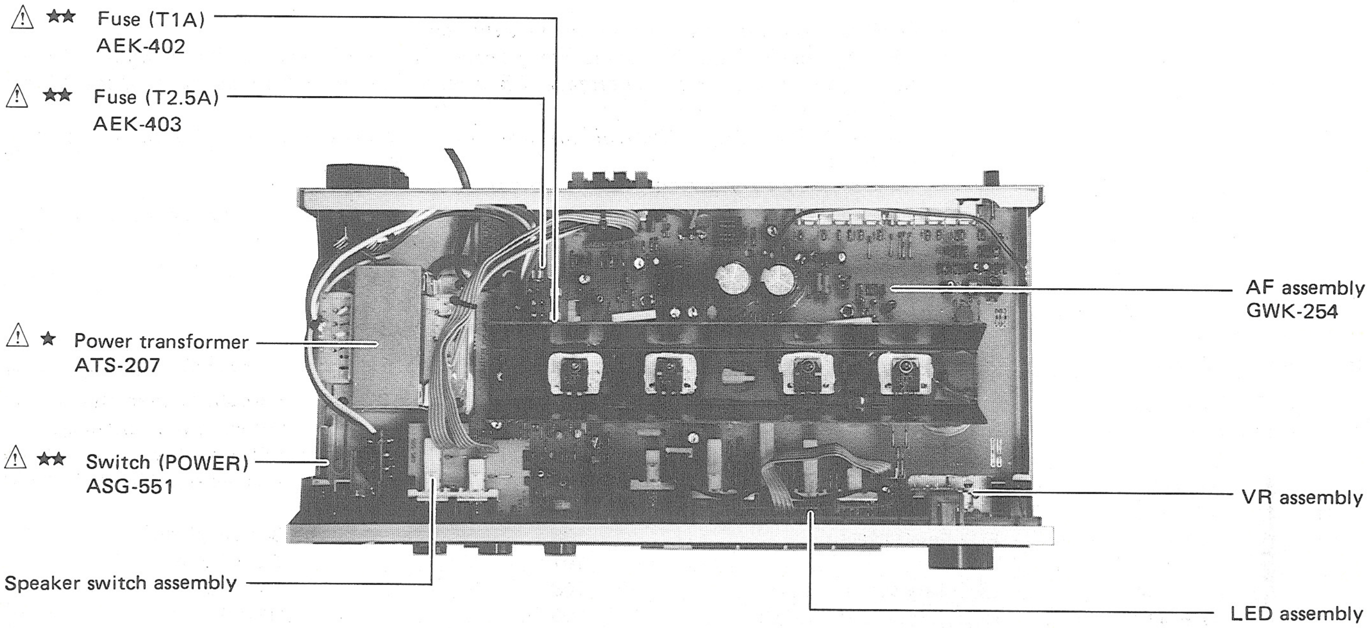
Front Panel View


Sheet panel
ANZ-009 (BLACK)
ANZ-148 (BLACK, S type only)
ANZ-010 (SILVER)
Bonnet case
ANE-554 (Black)
ANE-555 (Silver)
Push knob (SPEAKERS)
AAY-161
Front panel
ANM-913 (Black)
ANM-914 (Silver)
Power knob
AAY-128
Rotary knob (L) (VOLUME)
AAB-413
Headphones panel
AEP-241
Rotary knob (BASS)
AAB-414
Function knob (PHONO)
AAY-127
Rotary knob (TREBLE)
AAB-414
Function knob (TUNER)
AAY-127
Rotary knob (BALANCE)
AAB-414
Function knob (TAPE1)
AAY-127
Push knob (LOUDNESS)
AAY-161
Function knob (ADAPTOR/TAPE2)
AAY-127

Rear Panel View

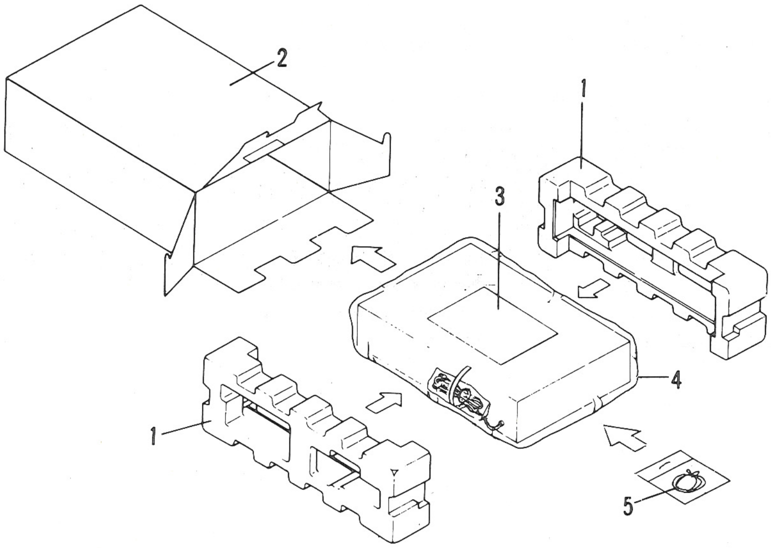

Terminal (SPEAKER)
AKE-102
⚠AC socket (3P)
AKP-502
Terminal (PHONO, TUNER,
TAPE1, TAPE2)
AKB-095
⚠ AC power cord
ADG-068

Top View


⚠ ★★ Fuse (T1A)
AEK-402
⚠ ★★ Fuse (T2.5A)
AEK-403
⚠ ★ Power transformer
ATS-207
⚠ ★★ Switch (POWER)
ASG-551
Speaker switch assembly
AF assembly
GWK-254
VR assembly
LED assembly

5. PACKING

Mark	No.	Part No.	Description
	1	AHA-340	Front rear pad
	2	AHE-529	Packing case (Black)
		AHE-530	Packing case (Silver)
	3	ARE-132	Operating instructions
	4	AHG-131	Polyethylene sheet
	5	AEA-057	Cable

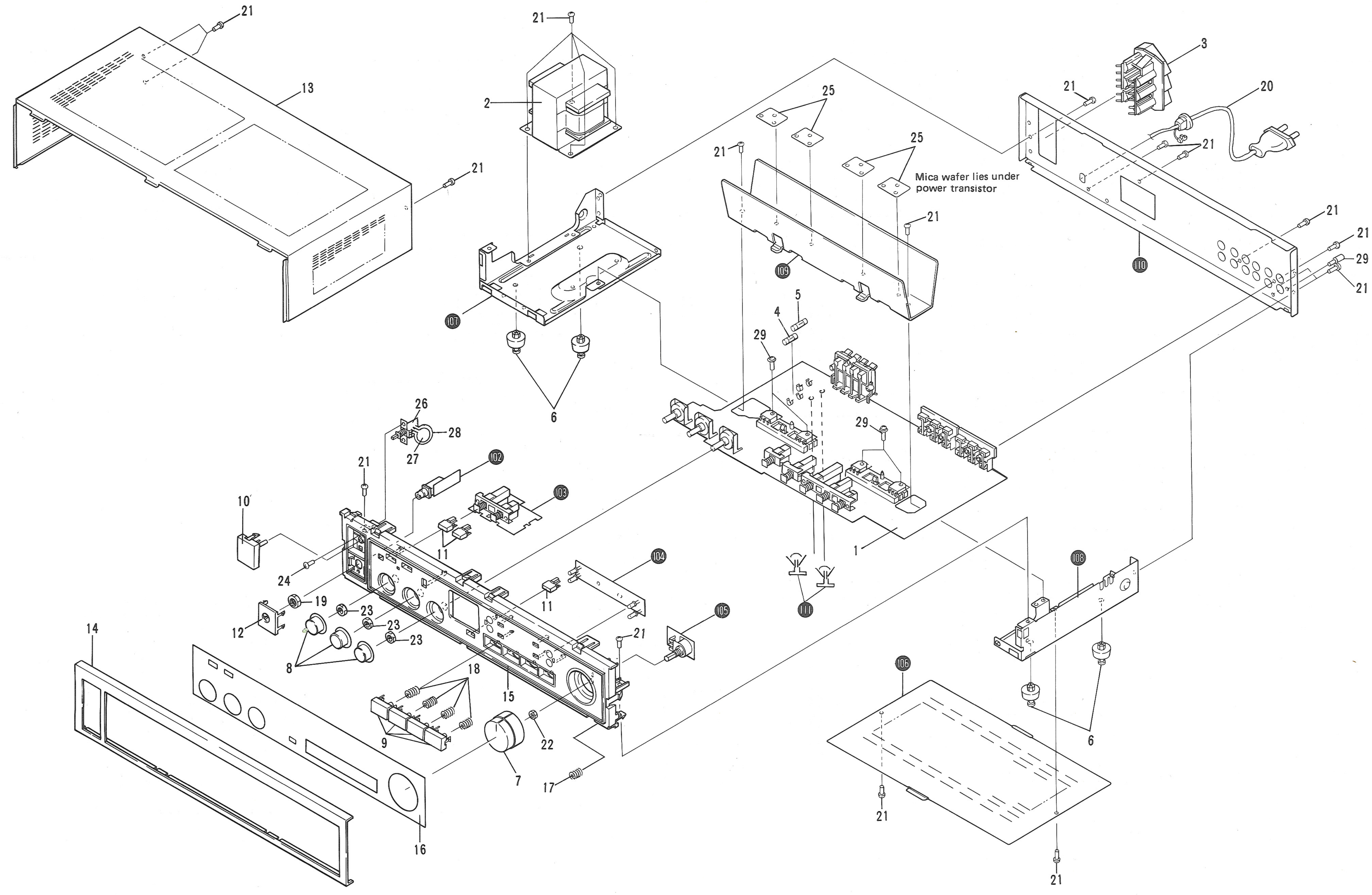


6. EXPLODED VIEW

- *Parts without part number cannot be supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*
  ★★ GENERALLY MOVES FASTER THAN ★.
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.

Mark	No.	Part No.	Description
	1	GWK-254	AF assembly
⚠ ★	2	ATS-207	Power transformer (AC220V/240V)
⚠	3	AKP-502	AC socket (3P)
⚠ ★★	4	AEK-402	FU1 Fuse (T1A)
⚠ ★★	5	AEK-403	FU2 Fuse (T2.5A)
	6	AEC-784	Leg assembly
	7	AAB-413	Rotary knob L (VOLUME)
	8	AAB-414	Rotary knob M
	9	AAY-127	Function knob
	10	AAY-128	Power knob
	11	AAY-161	Push knob
	12	AEP-241	Headphones panel
	13	ANE-554	Bonnet case (Black)
		ANE-555	Bonnet case (Silver)
	14	ANM-913	Front panel (Black)
		ANM-914	Front panel (Silver)
	15	ANR-993	Panel base
	16	ANZ-009	Sheet panel (Black)
		ANZ-148	Sheet panel (Black, S type only)
		ANZ-010	Sheet panel (Silver)
	17	ABH-041	Coil spring
	18	ABH-155	Coil spring
	19	ABN-093	Nut
⚠	20	ADG-068	AC power cord
	21	BBZ30P080FZK	Screw (3 x 8)
	22	NK70FUC	Nut
	23	NK90FUC	Nut
	24	VMZ30P060FMC	Screw (3 x 6)
	25	AEC-818	Mica wafer
⚠ ★★	26	ASG-551	Push switch (POWER)
⚠	27	ACG-502	Ceramic capacitor (C1)
	28	AEC-294	Condenser cover
	29	ABA-258	Screw

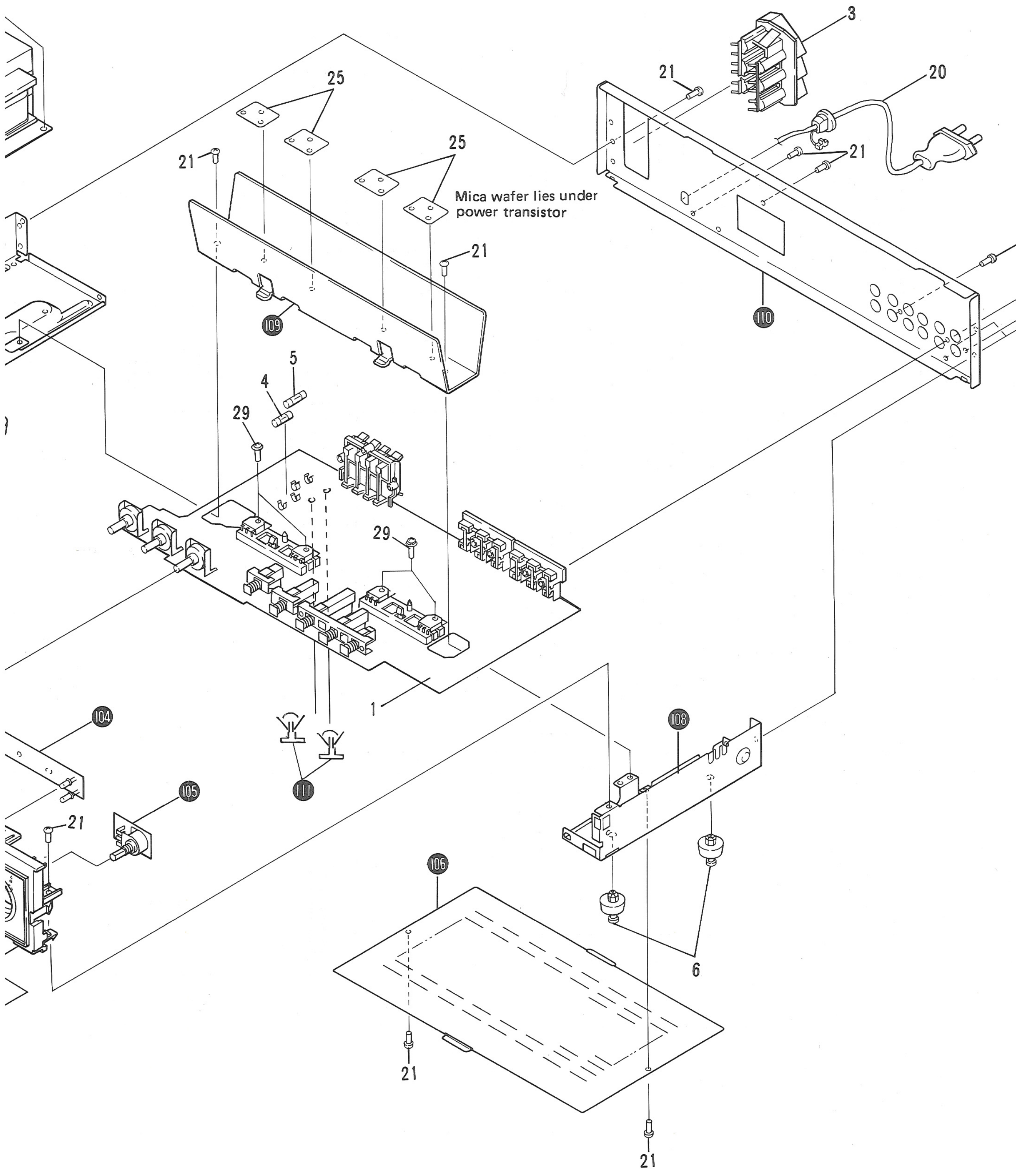
Mark	No.	Part No.	Description
	102		Headphone assembly
	103		Speaker switch assembly
	104		LED assembly
	105		Volume assembly
	106		Bottom plate
	107		Trans frame
	108		Right frame
	109		Heat sink
	110		Rear panel
	111		P.C.B. holder


21
13
21
21
2
107
6
21
25
25
21
109
21
5
4
29
29
1
111
3
21
20
21
110
21
21
29
21
26
28
27
21
102
103
10
11
24
19
12
23
23
23
8
104
11
105
21
14
18
15
9
22
7
17
16
106
21
108
6
21

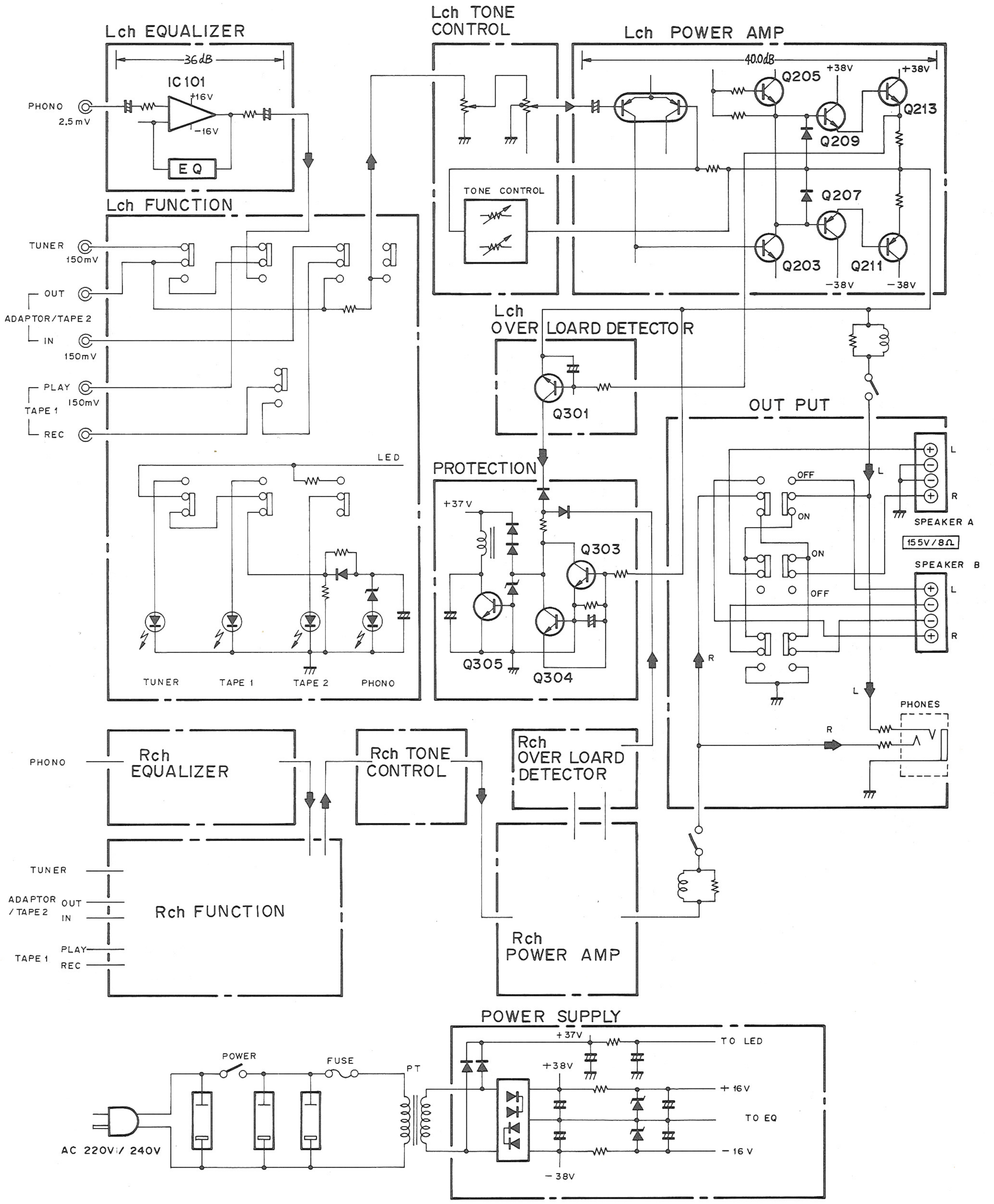
Mica wafer lies under power transistor

7. BLO

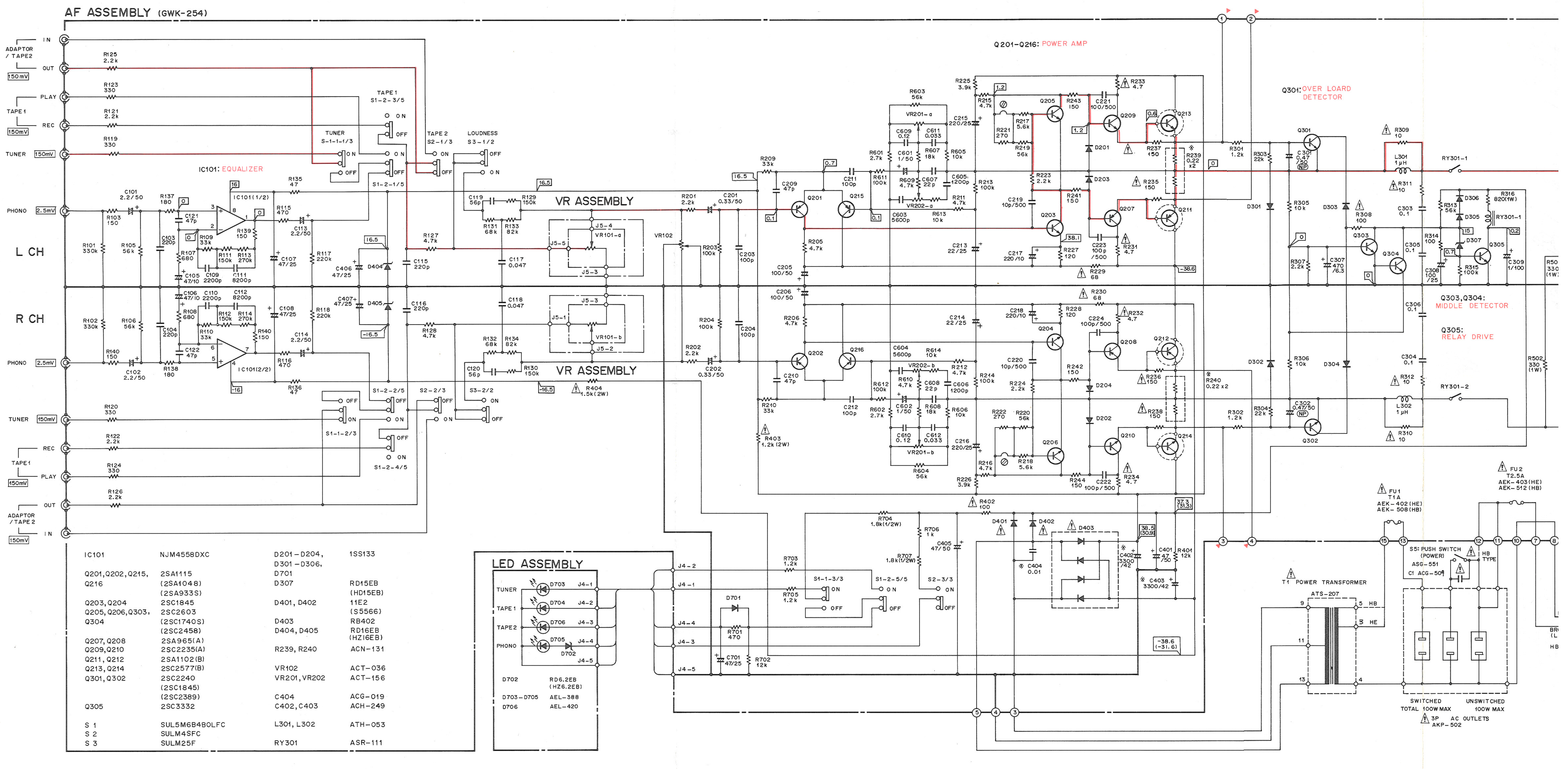
PHONO
2,5mV
TUNER
150mV
OUT
ADAPTOR/TAPE 2
IN
150mV
PLAY
TAPE 1
150mV
REC
PHONO
TUNER
ADAPTOR/TAPE 2
OUT
IN
TAPE 1
PLAY
REC
AC 22


3
21
20
25
25
21
21
Mica wafer lies under power transistor
21
109
110
21
21
29
21
5
4
29
29
1
104
111
105
21
108
106
6
21
21

7. BLOCK DIAGRAM

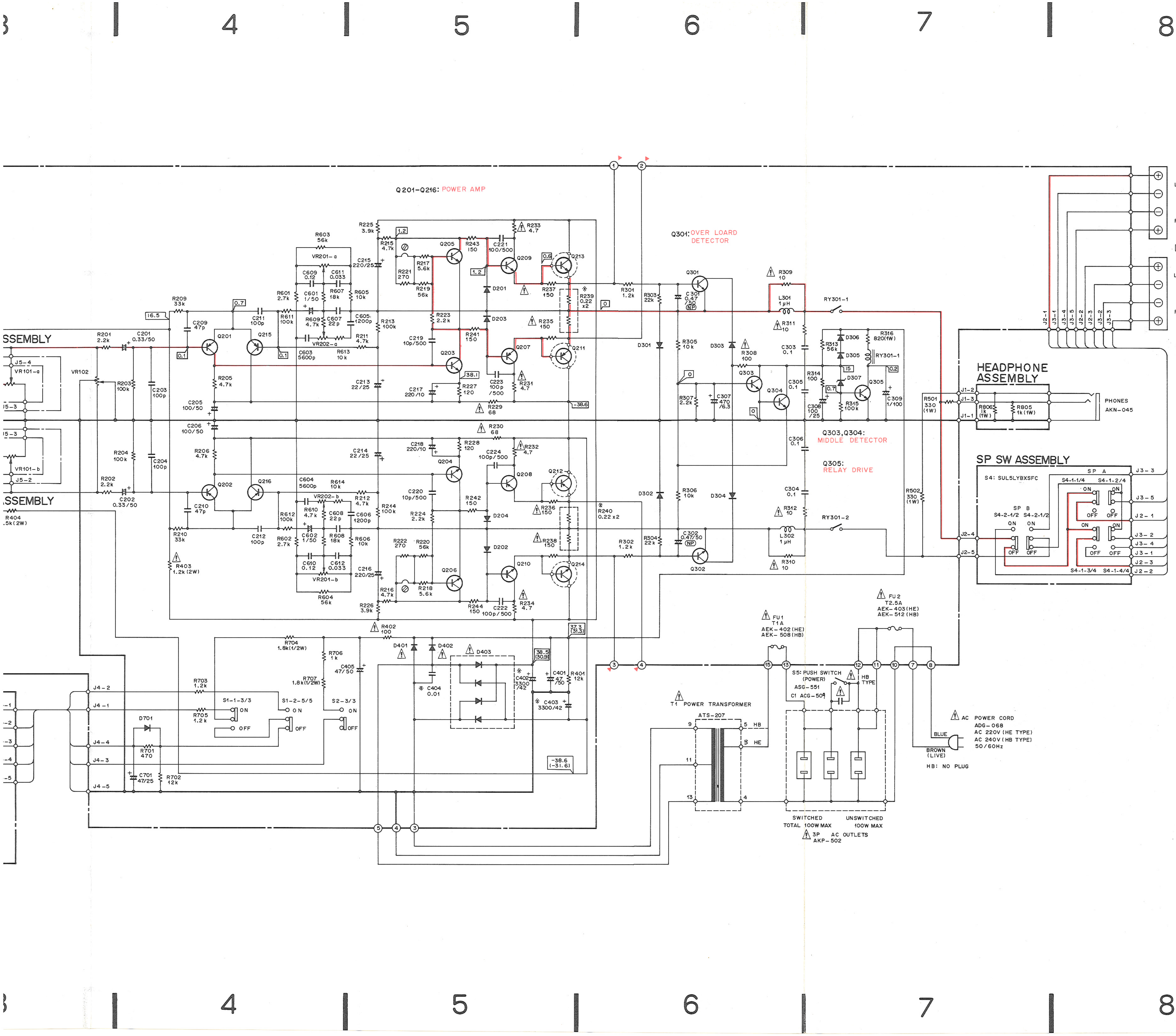

Lch EQUALIZER
36dB
IC101
+16V
−16V
PHONO
2.5mV
EQ
Lch TONE CONTROL
TONE CONTROL
Lch POWER AMP
40.0dB
Q205
+38V
+38V
Q213
Q209
Q207
Q203
Q211
−38V
−38V
Lch FUNCTION
TUNER
150mV
OUT
ADAPTOR/TAPE 2
IN
150mV
PLAY
150mV
TAPE 1
REC
LED
TUNER
TAPE 1
TAPE 2
PHONO
Lch OVER LOARD DETECTOR
Q301
PROTECTION
+37V
Q303
Q305
Q304
OUT PUT
L
OFF
ON
ON
OFF
L
R
SPEAKER A
155V/8Ω
SPEAKER B
L
R
R
L
R
PHONES
PHONO
Rch EQUALIZER
Rch TONE CONTROL
Rch OVER LOARD DETECTOR
TUNER
ADAPTOR / TAPE 2
OUT
IN
Rch FUNCTION
TAPE 1
PLAY
REC
Rch POWER AMP
POWER SUPPLY
+37V
TO LED
POWER
FUSE
PT
+38V
+16V
TO EQ
−16V
−38V
AC 220V / 240V

8. SCHEMATIC DIAGRAM


1
2
3
4
5
6
7
A
B
C
D
AF ASSEMBLY (GWK-254)
ADAPTOR / TAPE2
TAPE1
TUNER
PHONO
L CH
R CH
IC101: EQUALIZER
IC101(1/2)
IC101(2/2)
TAPE 1 S1-2-3/5
TUNER S-1-1-1/3
TAPE 2 S2-1/3
LOUDNESS S3-1/2
S1-2-1/5
S1-2-2/5
S2-2/3
S3-2/2
S1-1-2/3
S1-2-4/5
S1-1-3/3
S1-2-5/5
S2-3/3
VR ASSEMBLY
VR101-a
VR101-b
VR102
Q201-Q216: POWER AMP
Q301: OVER LOARD DETECTOR
Q303,Q304: MIDDLE DETECTOR
Q305: RELAY DRIVE
RY301-1
RY301-2
LED ASSEMBLY
TUNER
TAPE 1
TAPE2
PHONO
D702 RD6.2EB (HZ6.2EB)
D703-D705 AEL-388
D706 AEL-420
FU1 T1A AEK-402 (HE) AEK-508 (HB)
FU2 T2.5A AEK-403(HE) AEK-512 (HB)
S5: PUSH SWITCH (POWER) ASG-551
C1 ACG-504
HB TYPE
T1 POWER TRANSFORMER ATS-207
SWITCHED TOTAL 100W MAX
UNSWITCHED 100W MAX
3P AC OUTLETS AKP-502

IC101	NJM4558DXC	D201-D204, D301-D306, D701	1SS133
Q201,Q202,Q215, Q216	2SA1115 (2SA1048) (2SA933S)	D307	RD15EB (HD15EB)
Q203,Q204	2SC1845	D401, D402	11E2 (S5566)
Q205,Q206,Q303, Q304	2SC2603 (2SC1740S) (2SC2458)	D403	RB402
		D404, D405	RD16EB (HZ16EB)
Q207,Q208	2SA965(A)		
Q209,Q210	2SC2235(A)	R239, R240	ACN-131
Q211, Q212	2SA1102(B)		
Q213, Q214	2SC2577(B)	VR102	ACT-036
Q301, Q302	2SC2240 (2SC1845) (2SC2389)	VR201, VR202	ACT-156
		C404	ACG-019
Q305	2SC3332	C402, C403	ACH-249
S 1	SUL5M6B480LFC	L301, L302	ATH-053
S 2	SULM4SFC		
S 3	SULM25F	RY301	ASR-111

NOTE:
The indicated semiconductors are representative ones only. Other alternative semiconductors may be used and are listed in the parts list.



4
5
6
7
8
9
Q201–Q216: POWER AMP
Q301: OVER LOARD DETECTOR
Q303, Q304: MIDDLE DETECTOR
Q305: RELAY DRIVE
SSEMBLY
SSEMBLY
SPEAKER A
SPEAKER B
HEADPHONE ASSEMBLY
PHONES AKN-045
SP SW ASSEMBLY
S4: SUL5LYBXSFC
RY301-1
RY301-2
FU1 T1A AEK-402 (HE) AEK-508 (HB)
FU2 T2.5A AEK-403 (HE) AEK-512 (HB)
S5: PUSH SWITCH (POWER) ASG-551
C1 ACG-50
HB TYPE
T1 POWER TRANSFORMER ATS-207
AC POWER CORD ADG-068 AC 220V (HE TYPE) AC 240V (HB TYPE) 50/60Hz
BLUE
BROWN (LIVE)
HB: NO PLUG
SWITCHED TOTAL 100W MAX
UNSWITCHED 100W MAX
3P AC OUTLETS AKP-502
15.5V/8Ω

1. RESISTORS:
   Indicated in Ω, 1/4W, and 1/8W, ±5% tolerance unless otherwise noted k; kΩ, M; MΩ, (F); ±1%, (G); ±2%, (K); ±10%, (M); ±20% tolerance
2. CAPACITORS:
   Indicated in capacity (μF)/voltage (V) unless otherwise noted p; pF. Indication without voltage is 50V except electrolytic capacitor.
3. VOLTAGE, CURRENT:
   V ; Signal voltage at W + W, 8Ω output (1 kHz)
   ; DC voltage (V) at no input signal Value in ( ) is DC voltage at rated power.
4. OTHERS:
   ➡ ; Signal route.
   ⊘ ; Adjusting point.
   The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
   ※ marked capacitors and resistors have parts unmbers.
   The underlined indicates the switch position.

   This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.
5. SWITCHES:

SI−I FUNCTION(TUNER)	ON−OFF
SI−2FUNCTION(TAPE 1)	ON−OFF
S2 FUNCTION(TAPE 2/ADAPTOR)	ON−OFF
S3 LOUDNESS	ON−OFF
S4−1 SPEAKERS A	ON−OFF
S4−2 SPEAKERS B	ON−OFF
S5 POWER	ON−OFF

THE UNDERLINED INDICATES THE SWITCH POSITION

Line voltage selection (HE, HB TYPES)

Line voltage can be changed with following steps.

1. Decomment the AC power cord.
2. Remove the top cover.
3. Change the connection wire (To Power transformer) of Terminal No. 3 (VIOLET) as follows.

Voltage	Terminal No. 3	Terminal No. 5
220V	Violet	......
240V	......	Violet

4. Stick the voltage level on the rear panel.

Part No.	Description
AAX-193	220V level
AAX-192	240V level

1 2 3 4 5 6 7

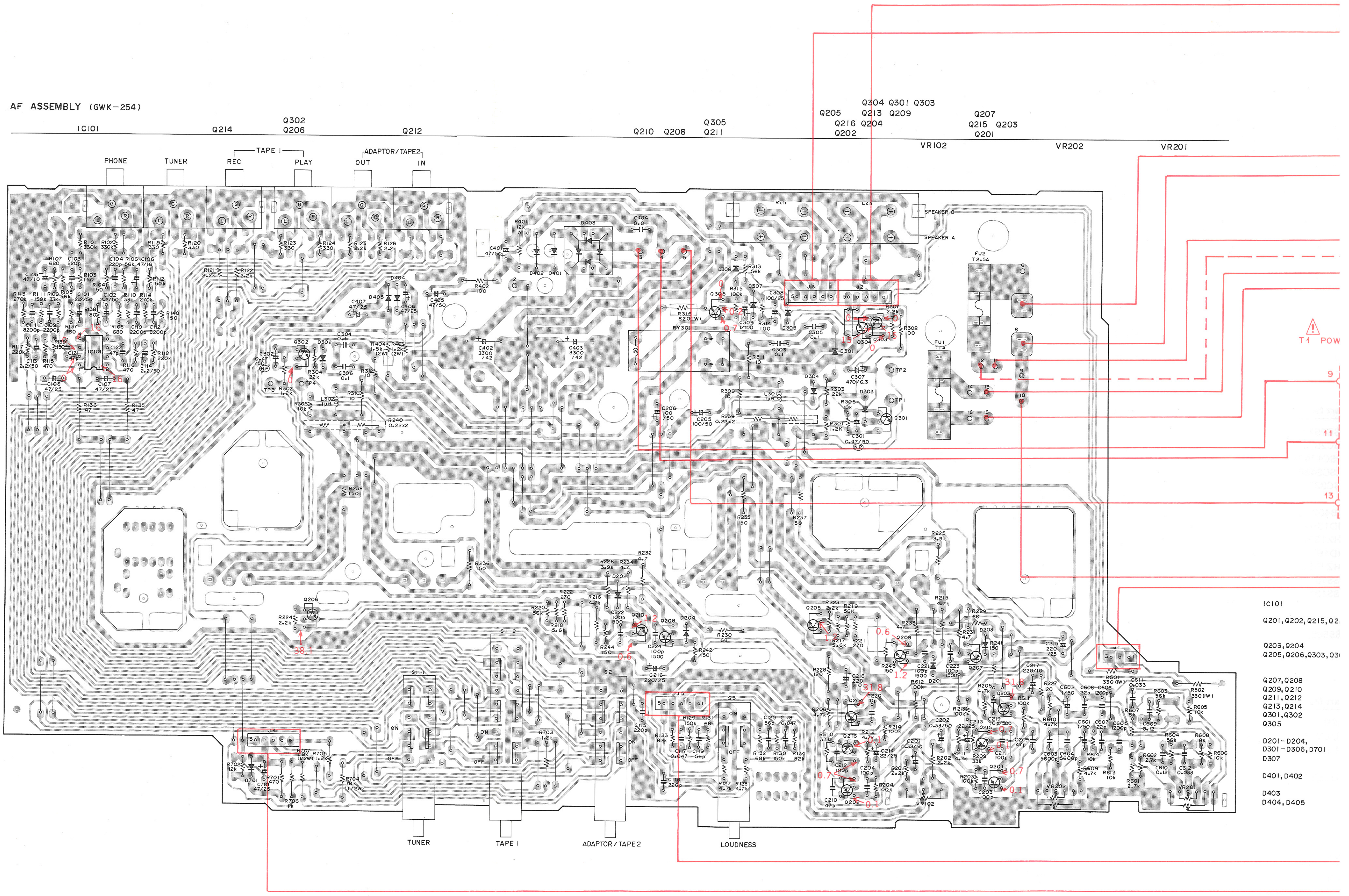
9. P.C. BOARDS CONNECTION DIAGRAM

A

B

C

D


AF ASSEMBLY (GWK-254)
IC101
Q214
Q302
Q206
Q212
Q210 Q208
Q305
Q211
Q205
Q216
Q202
Q304 Q301 Q303
Q213 Q209
Q204
Q207
Q215 Q203
Q201
VR102
VR202
VR201
PHONE
TUNER
TAPE I
REC
PLAY
ADAPTOR/TAPE2
OUT
IN
Rch
Lch
SPEAKER B
SPEAKER A
FU2
T2.5A
FU1
T1A
J1
J2
J3
J4
J5
RY301
S1-1
S1-2
S2
S3
ON
OFF
TUNER
TAPE I
ADAPTOR/TAPE 2
LOUDNESS
TP1
TP2
TP3
TP4
T1 POW
9
11
13

IC101

Q201, Q202, Q215, Q2

Q203, Q204
Q205, Q206, Q303, Q3

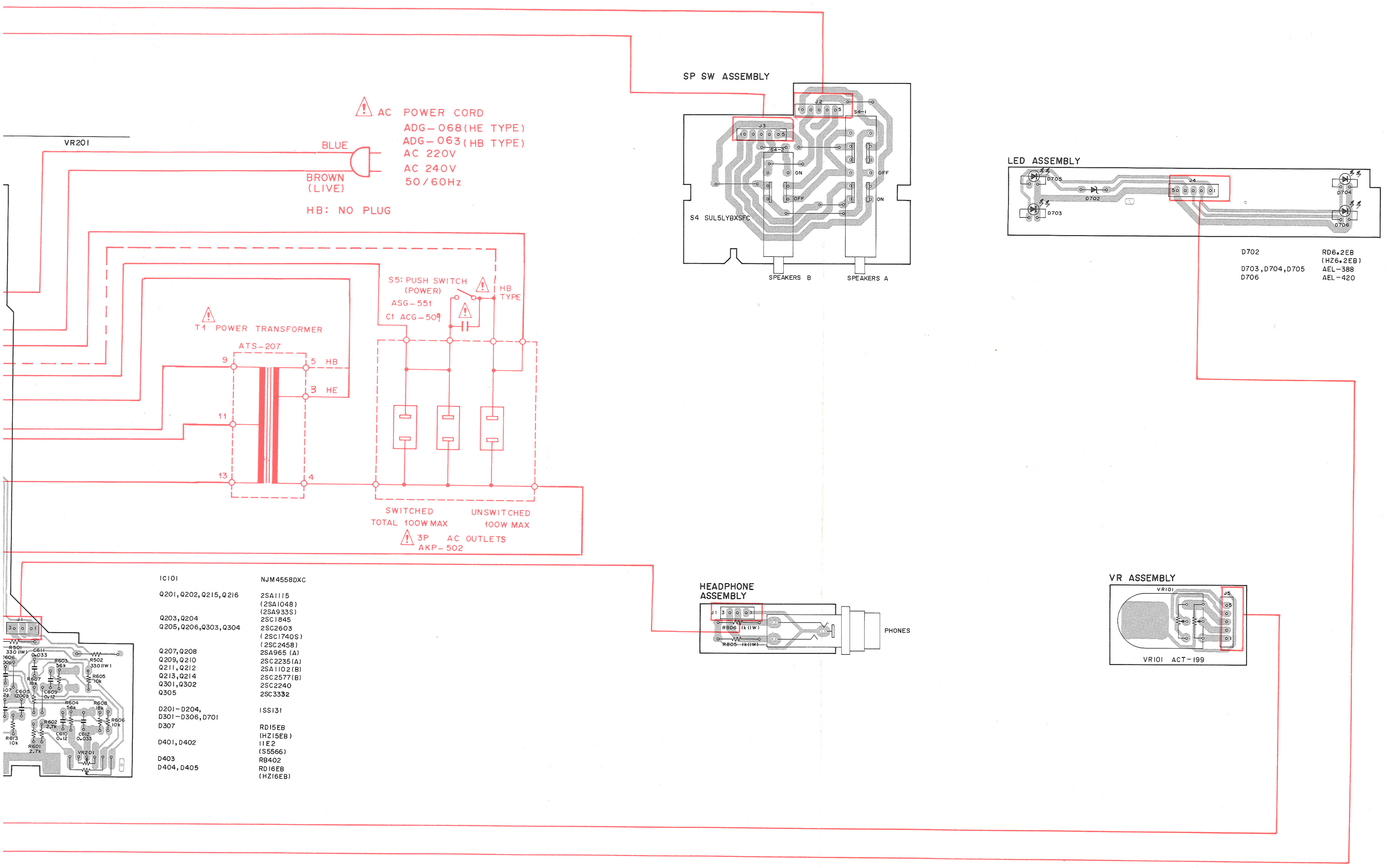
Q207, Q208
Q209, Q210
Q211, Q212
Q213, Q214
Q301, Q302
Q305

D201−D204,
D301−D306, D701
D307

D401, D402

D403
D404, D405

1 2 3 4 5 6 7

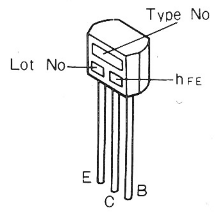

7
8
9
10
11
12
A
B
C
D
VR201
BLUE
BROWN
(LIVE)
AC POWER CORD
ADG-068(HE TYPE)
ADG-063(HB TYPE)
AC 220V
AC 240V
50/60Hz
HB: NO PLUG
T1 POWER TRANSFORMER
ATS-207
9
5 HB
3 HE
11
13
4
S5: PUSH SWITCH
(POWER)
ASG-551
C1 ACG-509
HB
TYPE
SWITCHED
TOTAL 100W MAX
UNSWITCHED
100W MAX
3P AC OUTLETS
AKP-502
SP SW ASSEMBLY
J2
J3
S4-1
S4-2
ON
OFF
S4 SUL5LYBXSFC
SPEAKERS B
SPEAKERS A
LED ASSEMBLY
D705
D702
D703
D704
D706
J4
HEADPHONE
ASSEMBLY
J1
R806 1k(1W)
R805 1k(1W)
PHONES
VR ASSEMBLY
VR101
J5
VR101 ACT-199
J1
R501
330 (1W)
C611
0.033
C606
C607
C605
1200p
R603
56k
R502
330 (1W)
R607
18k
C609
0.12
R605
10k
R604
56k
R608
18k
R606
10k
R602
2.7k
C610
0.12
C612
0.033
R613
10k
R601
2.7k
VR201

D702	RD6.2EB (HZ6.2EB)
D703,D704,D705	AEL-388
D706	AEL-420

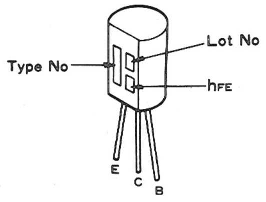
IC101	NJM4558DXC
Q201,Q202,Q215,Q216	2SA1115 (2SA1048) (2SA933S)
Q203,Q204	2SC1845
Q205,Q206,Q303,Q304	2SC2603 (2SC1740S) (2SC2458)
Q207,Q208	2SA965 (A)
Q209,Q210	2SC2235(A)
Q211,Q212	2SA1102(B)
Q213,Q214	2SC2577(B)
Q301,Q302	2SC2240
Q305	2SC3332
D201-D204, D301-D306,D701	1SS131
D307	RD15EB (HZ15EB)
D401,D402	11E2 (S5566)
D403	RB402
D404,D405	RD16EB (HZ16EB)

External Appearances of Transistor and ICs

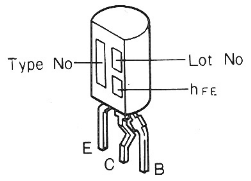
2SA1115
2SC2603



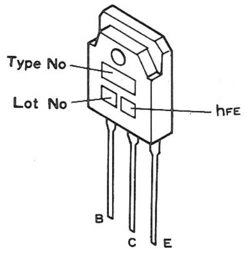
2SC1845



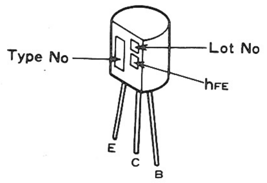
2SA965 (A)
2SC2235 (A)



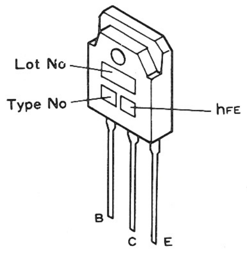
2SA1102



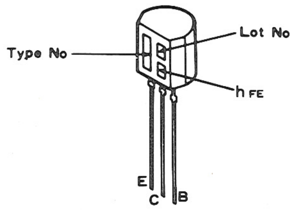
2SC2240
2SC2389



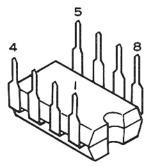
2SC2577



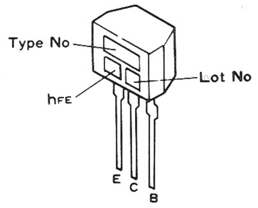
2SC3332



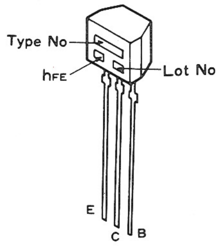
NJM4558DXC



2SA933S
2SC1740S



2SA1048
2SC2458



10. ELECTRICAL PARTS LIST

NOTES:

- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*

  Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

  560Ω 56 x 10^1 561 .... RD¼PS $\boxed{5}\boxed{6}\boxed{1}$ J
  47kΩ 47 x 10^3 473 .... RD¼PS $\boxed{4}\boxed{7}\boxed{3}$ J
  0.5Ω 0R5 .... RN2H $\boxed{0}\boxed{R}\boxed{5}$ K
  1Ω 010 .... RS1P $\boxed{0}\boxed{1}\boxed{0}$ K

  Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

  5.62kΩ 562 x 10^1 5621......... RN¼SR $\boxed{5}\boxed{6}\boxed{2}\boxed{1}$ F
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*

  ★★ GENERALLY MOVES FASTER THAN ★.

  This classification shall be adjusted by each distributor because it depends on model number , temperature, humidity, etc.

Miscellaneous Parts List

P.C. BOARD ASSEMBLIES

Mark	Symbol & Description	Part No.
	AF Assembly	GWK-254
	Speaker Switch Assembly	no supply
	Power Switch Assembly	no supply
	LED Assembly	no supply
	Headphone Assembly	no supply
	Volume Assembly	no supply

OTHERS

Mark	Symbol & Description		Part No.
⚠ ★	T1	Power transformer (AC220V/240V)	ATS-207
⚠		AC Socket (3P)	AKP-502
⚠★★	FU1	Fuse (T1A)	AEK-402
⚠★★	FU2	Fuse (2.5A)	AEK-403
⚠		AC Power cord	ADG-068
⚠★★	S5	Push switch (POWER)	ASG-551
⚠	C1	Ceramic capacitor	ACG-502

AF Assembly (GWK-254)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC101	NJM4558DXC
★★	Q211, Q212	2SA1102
★★	Q201, Q202, Q215, Q216	2SA1115 (2SA1048) (2SA933S)
★★	Q207, Q208	2SA965 (A)
★★	Q203, Q204	2SC1845
★★	Q209, Q210	2SC2235 (A)
★★	Q301, Q302	2SC2240 (2SC1845) (2SC2389)
★★	Q213, Q214	2SC2577
★★	Q205, Q206, Q303, Q304	2SC2603 (2SC1740S) (2SC2458)
★★	Q305	2SC3332
⚠ ★	D403	RB402
★	D307	RD15EB (HZ15EB)
★	D404, D405	RD16EB (HZ16EB)
★	D201 – D204, D301 – D306	1SS131
	D701	1SS131
⚠ ★	D401, D402	11E2 (S5566)

SWITCHES

Mark	Symbol & Description		Part No.
★★	RY301	Relay	ASR-111
★★	S3	Push switch (LOUDNESS)	SULM2SF
★★	S2	Push switch (TAPE2/ ADAPTOR)	SULM4SFC
★★	S1	Push switch (TUNER, TAPE1)	SUL5M6B4B0LFC

COILS

Mark	Symbol & Description	Part No.
	L301, L302	ATH-053

CAPACITORS

Mark	Symbol & Description	Part No.
	C404 (0.01/250V)	ACG-019
	C402, C403 (3300µF/42V)	ACH-249
	C219, C220	CCCSL100D500 (CCDSL100D500)
	C203, C204, C211, C212	CCCSL101J50 (CCDSL101J50)
	C221 – C224	CCCSL101K500 (CCDSL101K500)
	C607, C608	CCCSL220J50 (CCDSL220J50)
	C103, C104, C115, C116	CCCSL221J50 (CCDSL221J50)
	C121, C122, C209, C210	CCCSL470J50 (CCDSL470J50)
	C119, C120	CCCSL560J50 (CCDSL560J50)
	C301, C302	CEANPR47M50
	C201, C202	CEASR33M50
	C309	CEAS010M100
	C601, C602	CEAS010M50
	C308	CEAS101M25
	C205, C206	CEAS101M50
	C101, C102, C113, C114	CEAS2R2M50
	C213, C214	CEAS220M25
	C217, C218	CEAS221M10
	C215, C216	CEAS221M25
	C105, C106	CEAS470M10
	C107, C108, C406, C407, C701	CEAS470M25
	C401, C405	CEAS470M50
	C307	CEAS471M6
	C303 – C306	CQMA104K50
	C605, C606	CQMA122K50
	C609, C610	CQMA124K50
	C109, C110	CQMA222J50
	C611, C612	CQMA333K50
	C117, C118	CQMA473K50
	C603, C604	CQMA562K50
	C111, C112	CQMA822J50

RESISTORS

Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
★★	VR102 (BALANCE)	ACT-036
★★	VR201, VR202 (BASS, TREBEL)	ACT-156
	R239, R240 (0.22Ω x 2)	ACN-131
	R704, R707	RD1/2PM182J
⚠	R229, R230, R309 – R312, R402	RD1/4PMF □□□J
	R308	RD1/4PMF101j
	R121, R122, R135, R136, R202, R215, R216, R225 – R228, R401, R701, R703, R705, R706	RD1/4PM □□□J
⚠	R231 – R238	RFA1/4PS151J
	R316, R501, R502	RS1LMF □□□J
	R403, R404	RS2LMF □□□J
	Other resistors	RD1/8PM □□□J

OTHERS

Mark	Symbol & Description	Part No.
	Terminal (PHONO, TUNER, TAPE1, TAPE2)	AKB-095
	Terminal (SPEAKER)	AKE-102
	Mica wafer	AEC-818
	Screw	ABA-258

Speaker Switch Assembly

SWITCH

Mark	Symbol & Description	Part No.
★★	S4 Push switch (SPEAKER A,B)	SUL5LYBXSFC

LED Assembly

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★	D703 – D705	AEL-451
★	D706	AEL-426
★	D702	RD6.2EB (HZ6.2EB)

Headphone Assembly

RESISTOR

Mark	Symbol & Description	Part No.
	R805, R806	RS1LMF102J

OTHER

Mark	Symbol & Description	Part No.
	Jack (PHONES)	AKN-045

Volume Assembly

RESISTOR

Mark	Symbol & Description	Part No.
★	VR101 (VOLUME)	ACT-199

11. FOR HB, S TYPES

The HB, S types are the same as the HE type with the exception of the following sections.

Contrast of Miscellaneous Parts

Mark	Symbol & Description	Part No.			Remarks
		HE type	HB type	S type	
⚠ ★	T1 Power transformer (220V/240V)	ATS-207	ATS-207	....	
	(110V/120V/220V/240V)	....	....	ATS-249	
⚠	AC socket (AC OUTLETS)	AKP-502	AKP-505	AKP-504	
⚠ ★★	S6 Line voltage selector	....	....	AKX-504	
⚠ ★★	FU1 Fuse (T1A)	AEK-402	AEK-508	....	
	(1.6A)	....	....	AEK-121	
⚠ ★★	FU2 Fuse (T2.5A)	AEK-403	AEK-512	....	
	(1.6A)	....	....	AEK-121	
	Sheet panel (Black)	ANZ-009	ANZ-009	ANZ-148	
	Sheet panel (Silver)	ANZ-010	ANZ-010	ANZ-010	
	Operating instructions				
	(English)	....	ARB-695	ARB-695	
	(Spanish)	....	....	ARC-099	
	(English/French/German/Italian)	ARE-132	....	....	
⚠	AC power cord	ADG-068	ADG-063	ADG-073	
	Screw (3 x 10)	....	....	VTZ30P100FZK	

SCHEMATIC DIAGRAM FOR S TYPE

AF ASSEMBLY (GWK-254)